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(54) **Composite tubular woven seal for gas turbine nozzle and shroud interface**

(57) A compliant woven tubular seal (70) is provided in an arcuate cavity opening through an axial face of a plurality of shroud segments in opposition to a nozzle retaining ring. The annular composite tubular woven compliant seal includes a stainless steel inner metal core (78) surrounded by an annular layer of silica fiber (80). Surrounding the silica fiber is a metal foil (82) which prevents flow past the supplemental seal. an outer wear-resistant braiding (84) serves as a protective covering and wear surface.

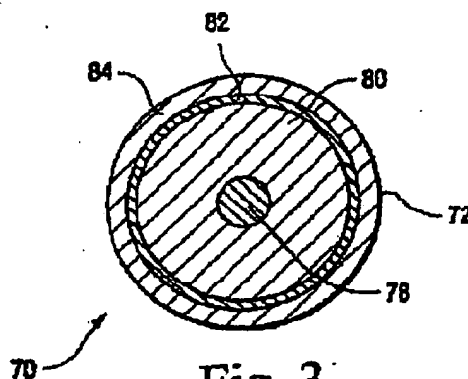


Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 5 372 476 A (HEMELGARN ET AL) 13 December 1994 (1994-12-13) * abstract; figures *	1,3	F02C7/28 F01D11/00 F16J15/08
A	US 5 301 595 A (KESSIE) 12 April 1994 (1994-04-12) * abstract; figures *	1-6	
A	US 3 894 742 A (TRELEAVE) 15 July 1975 (1975-07-15) * abstract; figures *	4	
A	WO 98 53228 A (ALLISON ADVANCED) 26 November 1998 (1998-11-26) * abstract; figures *	1,3	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			F02C F01D F16J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 5 December 2003	Examiner Narmino, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principles underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons S : member of the same patent family, corresponding document			

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ON EUROPEAN PATENT APPLICATION NO.

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05-12-2003

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 5372476	A	13-12-1994	NONE		
US 5301595	A	12-04-1994	NONE		
US 3894742	A	15-07-1975	NONE		
WO 9853228	A	26-11-1998	US	6076835 A	20-06-2000
			AU	7797298 A	11-12-1998
			WO	9853228 A1	26-11-1998

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